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09/894,392	06/28/2001	Eric J. Horvitz	MS171134.1	6446

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EXAMINER

GODDARD, BRIAN D

ART UNIT	PAPER NUMBER
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2171

6

DATE MAILED: 04/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/894,392

Applicant(s)

HORVITZ, ERIC J.

Examiner

Brian Goddard

Art Unit

2171

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 10-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This communication is responsive to Amendment A, filed 06 February 2004.
2. Claims 1-8 and 10-45 are pending in this application. Claims 1, 11, 18, 21, 24, 33, 39, 42, 43 and 45 are independent claims. In Amendment A, claim 9 was cancelled, and claims 1, 2, 4, 7, 8, 10, 18-19, 21, 24, 26, 29, 33-35, 37-40 and 42-43 were amended. This action is made Final.

### ***Claim Rejections - 35 USC § 102***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-3 and 11-13 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,193,171 to Shinmura et al.

Referring to claim 1, Shinmura discloses a system that facilitates maintaining an item as claimed. See Figures 1-4 and the corresponding portions of Shinmura's specification for this disclosure. In particular, Shinmura teaches "a system [See Fig. 1] that facilitates maintaining an item [file], comprising:

- a first data store [9] that stores the item in an active state;
- a second data store [10] that stores the item in an archived state; and
- an inference system [1] that inferentially determines [See Figs. 3-4] whether to store the item in an active or archived state based at least in part upon information related to [See discussion of Step 47 (column 6, lines 34-47)] at least one of: a property

of the item [size], a property of a user [user designation as archive file] and extrinsic data [least recently used]" as claimed.

Referring to claim 2, Shinmura discloses a system that facilitates maintaining an item as claimed. See Figures 1-2 and the corresponding portions of Shinmura's specification for this disclosure. Shinmura teaches the system of claim 1, as above, "further comprising: a property log [management catalogue 11] that stores as evidence at least one of: information related to a property of the item [size], a property of a user and extrinsic data [See above], the inference system consults the property log when making an inferential determination [See discussion of Step 47]" as claimed.

Referring to claim 3, Shinmura discloses a system that facilitates maintaining an item as claimed. See Figures 3-4 and the corresponding portions of Shinmura's specification for this disclosure. Shinmura teaches the system of claim 2, as above, "the inference system further basing determinations upon a probability of user access [choosing a file that has not been used or is least recently used (oldest referenced) {See column 6, lines 37-43}] to the item" as claimed.

Claim 11 is rejected on the same basis as claim 1. See the discussion regarding claim 1 above for the details of this disclosure.

Claim 12 is rejected on the same basis as claim 3, in light of the basis for claim 11. See the discussions regarding claims 1-3 and 11 above for the details of this disclosure.

Referring to claim 13, Shinmura discloses the utility based item archiving system as claimed. See Figures 3-4 and the corresponding portions of Shinmura's specification

for this disclosure. Shinmura teaches the system of claim 12, as above, being temporally sensitive such that a determined utility of an item and storage inferences drawn therefrom [archive/recall processing] are continually updated over time [every time active storage space runs out or a file is added that is larger than the available active space] as claimed.

4. Claims 1-4 and 11-13 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,199,103 to Sakaguchi et al.

Referring to claim 1, Sakaguchi discloses a system that facilitates maintaining an item as claimed. See Figures 1-5 and the corresponding portions of Sakaguchi's specification for this disclosure. In particular, Sakaguchi teaches "a system that facilitates maintaining an item, comprising:

- a first data store [5] that stores the item in an active state;
- a second data store [6] that stores the item in an archived state; and
- an inference system [2] that inferentially determines whether to store the item in an active or archived state based at least in part upon information [3] related to at least one of: a property of the item, a property of a user and extrinsic data" as claimed.

Referring to claim 2, Sakaguchi discloses the system that facilitates maintaining an item as claimed. See Figures 1-3 and the corresponding portions of the specification for this disclosure. Sakaguchi teaches the system of claim 1, as above, "further comprising: a property log [3] that stores as evidence at least one of: information related to a property of the item, a property of a user and extrinsic data, the inference

system consults [Loop for each condition between ST1 and ST2] the property log when making an inferential determination” as claimed.

Referring to claim 3, Sakaguchi discloses the system that facilitates maintaining an item as claimed. See Figures 1-3 and the corresponding portions of the specification for this disclosure. Sakaguchi teaches the system of claim 2, as above, the inference system further basing determinations upon a probability of user access [junk degree (or non-junk degree)] as claimed.

Referring to claim 4, Sakaguchi discloses the system that facilitates maintaining an item as claimed. See Figures 1-3 and the corresponding portions of the specification for this disclosure. Sakaguchi teaches the system of claim 3, as above, “wherein at least one of: a property of the item, a property of a user and extrinsic data undergo probabilistic computations [step ST2] to ascertain a probability of user access” as claimed.

Claim 11 is rejected on the same basis as claim 1. See the discussion regarding claim 1 above for the details of this disclosure.

Claim 12 is rejected on the same basis as claim 3, in light of the basis for claim 11. See the discussions regarding claims 1-3 and 11 above for the details of this disclosure.

Referring to claim 13, Sakaguchi discloses the utility based archiving system as claimed. See Figures 1-3 and the corresponding portions of the specification for this disclosure. Sakaguchi teaches the system of claim 12, as above, being temporally sensitive [through learning section (7)] such that a determined utility of an item [junk (or

non-junk) degree] and storage inferences drawn therefrom are continually updated over time as claimed.

***Claim Rejections - 35 USC § 103***

5. Claims 4-6, 14-21, 23-28, 30-37 and 39-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinmura in view of the article entitled "Continual Computation Policies for Utility-Directed Prefetching" by Horvitz (hereinafter 'Horvitz').

Referring to claim 4, Shinmura's system does not explicitly perform "probabilistic computations to ascertain a probability of user access" as claimed. That is, Shinmura's probability of user access is not necessarily calculated by "probabilistic computations", but is instead determined by past user accesses. Specifically, a file that has not been accessed by a particular user, or a file that is least recently accessed out of all of a user's files, has the lowest probability of user access in Shinmura's determination.

Horvitz discloses a system and method similar to that of Shinmura, wherein archived files are pre-fetched into active storage if they have a high probability of user access, but kept in archive storage if they have a low probability of user access. Specifically, Horvitz teaches performing probabilistic computations on a property of the item, a property of a user or extrinsic data to ascertain a probability of user access to the item as claimed. See section 3, pages 179-181, for the details of this disclosure.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement Horvitz' probabilistic computations in Shinmura's system to determine the probability of user access to a specific item as a basis for

determination to archive the item or keep it active. One would have been motivated to do so in order to provide a more accurate, yet cost-effective means for determining probability of user access, instead of a simple choice of a non/least accessed item.

Referring to claims 5 and 6, the system and method of Shinmura in view of Horvitz as applied to claim 4 above discloses the invention as claimed. Shinmura does not explicitly state that the inference system bases archive/migrate determinations upon a value density of the item as claimed. However, Shinmura's (as modified by Horvitz) determinations are based on both a probability of user access (See above) to an item and the size of the item (See Shinmura's description of Step 47), which are the sole constituents of applicant's claimed "value density". Therefore, Shinmura provides direct suggestion for basing archive determinations upon a value density of the item as claimed.

Horvitz further teaches basing determinations upon a value density of the item as claimed. See sections 2.4-2.5 on page 179 for the details of this disclosure. Specifically, Horvitz' decision to migrate an item is based on the flux of the item,  $\Psi(\text{segment})$ , which is the value density of an item, as claimed, given a constant transmission rate (R) and a *Value(Component)* of 1.0 for a full file ['the maximal content for the document' (See lines 2-9 of the second column on page 179)]. That is, Horvitz' equation of Section 2.5 can be reduced such that the flux [ $\Psi(\text{segment})$ ] divided by the transmission rate  $[R] = \text{value density} = \text{the probability of user access given evidence } [p(D|E)] \text{ divided by the size of the item } [Size(Component)]$  as claimed in claim 6, where



*Value*(Component) = 1.0 for a full file migration and the transmission rate (R) is constant (and thus factored out).

In using Horvitz' probabilistic computations in the system and method of Shinmura as above, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement Horvitz' calculation of a value density in Shinmura's (as modified by Horvitz) system as a basis for determination to archive the item or keep it active. One would have been motivated to do so because of the direct suggestion provided by Shinmura, as above, in view of Shinmura's silence on the detailed calculations used in decision step 47.

Claims 14-15 are rejected on the same basis as claims 5-6, in light of the basis for claim 13 above. See the discussions regarding claims 1-6 and 11-13 above for the details of this disclosure.

Referring to claims 16-17, the system and method of Shinmura in view of Horvitz as applied to claim 15 above discloses the invention as claimed. See Figures 1-4 and the corresponding portions of Shinmura's specification for this disclosure. Shinmura's (as modified by Horvitz) system employs a knapsack packing analysis [Space Allocation Processing] to determine how to store the item by considering respective value densities of items [See above] to determine which items to store as active and which items to archive [archive/recall processing] as claimed.

Claim 18 is rejected on the same basis as claim 5. See the discussions regarding claims 1-5 above for the details of this disclosure.

Claim 19 is rejected on the same basis as claim 13, in light of the basis for claim 18 above. See the discussions regarding claims 13 and 18 for the details of this disclosure.

Claim 20 is rejected on the same basis as claim 16, in light of the basis for claim 19. See the discussions regarding claims 16 and 19 for the details of this disclosure.

Claim 21 is rejected on the same basis as claim 5. See the discussions regarding claims 1-5 for the details of this disclosure.

Claim 23 is rejected on the same basis as claim 18. See the discussion regarding claim 18 above for the details of this disclosure.

Claims 24-26 are rejected on the same basis as claim 5. See the discussions regarding claims 1-5 above for the details of this disclosure.

Claims 27-28 are rejected on the same basis as claim 13, in light of the basis for claim 26. See the discussions regarding claims 13 and 26 above for the details of this disclosure.

Referring to claim 30, the system and method of Shinmura in view of Horvitz as applied to claim 24 above discloses the invention as claimed. See Figures 1-4 and the corresponding portions of Shinmura's specification, as well as sections 2.4-2.5 of Horvitz' article for this disclosure. The system of Shinmura in view of Horvitz further comprises an interactive user interface [14] as claimed.

Referring to claims 31-32, the system and method of Shinmura in view of Horvitz as applied to claim 30 above discloses the invention as claimed. The UI of Shinmura in view of Horvitz includes a selection element operative to allow a condition to be

enabled/disabled and an entry element operative to allow a condition to be configured as claimed. See Shinmura's discussion of Steps 40-48 as well as section 2.5 of Horvitz' article for the details of this disclosure.

Claims 33-35 are rejected on the same basis as claim 16. See the discussions regarding claims 1-5 and 16 above for the details of this disclosure.

Claims 36-37 are rejected on the same basis as claim 13, in light of the basis for claim 35. See the discussions regarding claims 13 and 35 above for the details of this disclosure.

Claims 39-41 are rejected on the same basis as claim 16. See the discussions regarding claims 1-5 and 16 above for the details of this disclosure.

Claims 42-44 are rejected on the same basis as claim 5. See the discussions regarding claims 1-5 above for the details of this disclosure.

Claim 45 is rejected on the same basis as claim 32. See the discussions regarding claims 30-32 above for the details of this disclosure.

6. Claims 7-8, 10, 22, 29 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinmura in view of Horvitz as applied to claim 6 above, and further in view of Sakaguchi et al.

Referring to claim 7, Shinmura's (as modified by Horvitz) inference system does not explicitly determine whether the item should be regarded as a one-shot item as claimed. However, Shinmura's (as modified by Horvitz) system does detect items that have been accessed once but not accessed again after that. See the description of

steps 46-48 in Shinmura's specification for this disclosure. This provides suggestion for detection of one-shot items for earlier archival so less active memory space is used.

Sakaguchi, as shown above, discloses a system and method similar to that of Shinmura. Sakaguchi further teaches an inference system [2] operable to determine whether an item should be regarded as a one-shot item [junk mail] based upon at least one of: a property of the item, a property of a user, extrinsic data, a determined probability and value density [See discussion of element 3] as claimed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Sakaguchi's junk mail detection processing to the system of Shinmura in view of Horvitz so as to determine whether an item should be regarded as a one-shot item, to obtain the invention as claimed. One would have been motivated to do so in the interest of archiving one-shot items immediately after access so they do not use active storage space necessary for other, more important files. Further motivation for the combination comes from Shinmura's suggestion, as provided above.

Referring to claim 8, the system and method of Shinmura in view of Horvitz and Sakaguchi as applied to claim 7 above discloses the invention as claimed. See Figure 1 and the corresponding portion of Sakaguchi's specification, as well as Figures 1-3 and the corresponding portions of Shinmura's specification for this disclosure. Sakaguchi's one-shot item processing as added to the system of Shinmura in view of Horvitz teaches the system of claim 7, as above, operable to store a one-shot item [junk mail] in an archived state [See steps 2, 4 and 6] after it is accessed [See step 1] as claimed.

Referring to claim 10, the system and method of Shinmura in view of Horvitz and Sakaguchi as applied to claim 7 above discloses the invention as claimed. See Figures 1-5 and the corresponding portions of Sakaguchi's specification for this disclosure. Sakaguchi's one-shot item processing, as added to the system of Shinmura in view of Horvitz, further comprises a learning system [7] that acts upon the inference system [2] and modifies inferences made thereby based upon at least one of: a property of the item, a property of a user, extrinsic data, a determined probability and a value density [See Fig. 3] as claimed.

Claim 22 is rejected on the same basis as claim 8, in light of the basis for claim 21 above. See the discussions regarding claims 7-8 and 21 for the details of this disclosure.

Claim 29 is rejected on the same basis as claim 10, in light of the basis for claim 28 above. See the discussions regarding claims 7, 10 and 28 for the details of this disclosure.

Claim 38 is rejected on the same basis as claim 10, in light of the basis for claim 37 above. See the discussions regarding claims 7, 10 and 37 for the details of this disclosure.

### ***Response to Arguments***

7. Applicant's arguments filed 06 February 2004 have been fully considered but they are not persuasive.

Referring to applicant's remarks on pages 10-12 regarding the Section 102 rejection of claims 1-3 and 11-13 over Shinmura: Applicant argued that Shinmura does not employ an inference-based approach to archival decision-making, but rather teaches a rudimentary rule-based archival scheme.

The examiner disagrees for the following reasons: First, applicant's argument is based on features which are not claimed in these rejected claims. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., that the inferential determination requires a probabilistic or statistical cost-benefit analysis) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Applicant's arguments amount to a general allegation that the inference-based approach defines a patentable invention without specifically pointing out how the **language of the claims** patentably distinguishes them from the references. The examiner maintains that Shinmura's determination is 'inferential' because it is a conclusion [which file(s) to archive vs. which file(s) to keep active] drawn from facts [e.g. usage of file] as required by the definition of inference. Therefore, Shinmura does teach the inference system that inferentially determines whether to store the item in an active or archived state...as claimed.

Referring to applicant's remarks on pages 12-13 regarding the Section 102 rejection of claims 1-4 and 11-13 over Sakaguchi: Applicant argued that Sakaguchi not only fails to teach or suggest the inferential determination of the subject invention

(providing substantially the same arguments as those against Shinmura above) but teaches away from the invention.

The examiner disagrees for substantially the same reasons as those provided above, and for the following additional reason: Applicant's additional argument, that Sakaguchi teaches away from the claimed invention, is again based on features which are not claimed. Namely, the features of dynamically migrating an e-mail *between* an active store and a back-up store, and inferring whether to **maintain** items in an active store or **move** such items to an inactive store and *vice versa* are simply not found in the language of the rejected claims. Therefore, Sakaguchi does teach each and every limitation of the claimed invention.

Referring to applicant's remarks on pages 14-16 regarding the Section 103 rejections of the remaining claims: Applicant argued that neither Shinmura nor Horvitz, alone or in combination, teach the claimed probabilistic analysis, and further that there is no motivation to combine the references other than via employment of hindsight reasoning.

The examiner disagrees for the following reasons: First, Horvitz clearly teaches the claimed probabilistic analysis, as shown in the portions of the article cited above. Thus, the combination of Shinmura and Horvitz, as set forth previously, includes the probabilistic analysis as claimed. Second, in response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or

motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, suggestion to combine is found in both the references themselves and the knowledge generally available to one of ordinary skill in the art. Specifically, suggestion can be found in Horvitz' fulfillment of a need to more accurately gauge probability of user access to a document/file, as disclosed in Section 3 of the Horvitz reference, in light of the simplistic measure of probability disclosed in Shinmura.

### ***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.



9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Goddard whose telephone number is 703-305-7821. The examiner can normally be reached on M-F, 9 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on 703-308-1436. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

bdg  
08 March 2004

  
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